Rejected claims 5, 6, 31 and 32 have been cancelled. New claims 43-50 should patentably distinguish over the applied art, as discussed more, later.

The objection to claims 23 and 26 should be moot in view of the deletion of those claims (July 27, 2000 amendment, page 2).

The Office Action Summary, at item 10, indicates that the drawings September 26, 2000 are objected to by the Examiner. The text on page 2, however, indicates that the corrected drawings received on that date are approved by the Examiner. Applicants' filing on September 26, 2000 included a drawing correction proposal. Applicants presume that the Examiner actually has approved of that proposal. Applicants also note the informalities in the original drawings indicated on the PTO-948 form attached to the February 27, 2002 version of the Action. Applicants intend to file new drawings, meeting the formal requirements and incorporating the approved correction, following receipt of a notice of allowability of all pending claims.

Applicants have revised the text of several paragraphs of the specification, to polish the language thereof. Marked-up copies showing the changes are attached.

Applicants also request consideration of the documents cited in the concurrently filed Supplemental Information Disclosure Statement.

The Rejection

Claims 5, 6, 31 and 32 were rejected under 35 U.S.C. 103 as unpatentable over U.S. Patent No. 6,163,533 to Esmailzadeh et al. (hereinafter Esmailzadeh) in combination with U.S. Patent No. 5,103,459 to Gilhousen et al. (hereinafter Gilhousen).

In the background section cited by the Examiner, the Esmailzadeh Patent describes a Spread Spectrum Slot Reservation Multiple Access (SS-SRMA) System, which uses a slotted-ALOHA (S-ALOHA) random access scheme. At the beginning of a slot, a mobile station sends a random access packet to the base station and then awaits an acknowledgment from the base station that the packet was received (see column 1, lines 45-53). The specific system disclosed by Esmailzadeh et al. allegedly uses a slotted-ALOHA random access scheme (Examiner points to Fig. 7). The background of the Esmailzadeh Patent also describes a separate system with random access (not slotted-ALOHA) and power ramping preamble transmissions (column 1, lines 31-44 and 54-67). The Examiner holds that Esmailzadeh satisfies the claim limitations, except for the transmission of the frame timing over a common sync channel, the channel authorization from the base station and the claimed controller.

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The Examiner relies on Gilhousen for disclosure of the several features not taught by Esmailzadeh. The Gilhousen patent actually concentrates on constructing PN sequences for CDMA communications. However, Gilhousen discloses a cell-to-mobile link that includes pilot, sync, paging and voice channels (see abstract); and presumably, the sync channel is used for the timing necessary to implement the slotted-ALOHA, envisioned as the access technique for the mobile-to-cell link (see column 35, lines 64-68). The rejection essentially concludes that these teachings in Gilhousen are enough to make up for the noted deficiencies in the teachings of the Esmailzadeh Patent.

Applicants respectfully traverse this rejection.

Patentability

Applicants respectfully submit that the combination of references does not fairly suggest the subject matter of new claims 43-50. The disclosed random access technique includes an access phase in which a mobile station transmits a preamble and listens for a corresponding acknowledgement. The mobile station will repeat this operation at an increased power level, if it does not detect the acknowledgement corresponding to its transmitted preamble. The process continues at successively higher power levels until the base station receives and detects a preamble and sends back the corresponding acknowledgement or until the mobile station reaches some maximum number of repetitions of the preamble transmission. In this manner, the mobile station transmits a preamble at selected spacing/intervals, with each successive transmission stepped to a higher transmit-power level, and it ceases preamble transmission in order to send data upon receipt of a corresponding acknowledgement. Attention is directed to Figs. 6 and 7 and to page 16 lines 8-11, and page 17, line 13 to page 18, line 5. The applied prior patents do not fairly suggest such an access phase; and as described below, the new claims have been drafted to specify in various forms one or more distinguishing aspects of this disclosed inventive random access technique.

For example, new claim 43 specifies a first preamble transmission at a first power, and a second preamble transmission at a higher second power if the remote station receiver does not receive an acknowledgement. The base station detects the second preamble transmission and transmits back an acknowledgement. The remote station sends data in response to receipt of the acknowledgement transmitted from the base station. The combination of Esmailzadeh and Gilhousen would not result in the claimed sequence of steps.

The methodology actually disclosed in the Esmailzadeh Patent relates to assigning each sector in a cell a unique preamble spreading code and a unique long-code, which is concatenated

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with a signature-associated short code to spread the data in the data field portion of a random access packet, and setting the widths of the transmission time slows to the length of the preambles. Hence, the system in Esmailzadeh transmits an access packet containing a data field, which consists of the data, a sector specific long spreading code and a short code associated with signature I (see Fig 8). There is no transmission of preambles separately preceding the access packet, and there is no transmission of a second preamble at a power higher than the power level of the first preamble transmission. Addition of a sync channel or some other portion of the network operations of Gilhousen would not make up for this deficiency.

The background of the Esmailzadeh Patent also describes a few separate systems with random access. Of these, the SS-SRMA System disclosed in column 1, lines 45-50, is really just a description of the well known slotted ALOHA approach. In this system, the mobile station sends a random access PACKET to the base and then awaits an acknowledgment. The PACKET may include data but there is no power ramping or power control whatsoever. Again, there no is preamble transmission and no second preamble transmission at a higher power level, and addition bits and pieces of Gilhousen would still not result in a technique that includes such preamble transmissions.

The background discussion of the CODIT system described in lines 31-44 and 54-67 of column 1 of the Esmailzadeh Patent fails to disclose the use of the acknowledgement as in claim 43. According to the description in this background section, once the base station detects the access request preamble, it directly proceeds to activate a closed loop power control (CLPC) circuit to power control the mobile station's power level. This means that the mobile station must still be transmitting, so that the base station has something to control (the power ramping is continuous). Moreover, contrary to the examiner's comments, the initial "handshaking" is different from the claimed acknowledgement. In the disclosed technique, the handshaking actually refers to the mobile station being power-controlled by the base station. The mobile station will know that the base station has detected its preamble only after the mobile station is being power-controlled by the base station. The claim requires specifically that the mobile station responds to receipt of an acknowledgement that corresponds to a transmitted preamble, which is simply absent from the CODIT access technique as disclosed by Esmailzadeh. Gilhousen also fails to teach the claimed use of the acknowledgement, and as a result, does not make up for the deficiencies of the CODIT system taught by Esmailzadeh. As noted, Gilhousen discloses a cell-to-mobile link that includes pilot, sync, paging and voice channels (see abstract), wherein the sync channel is used for the timing

necessary to implement the slotted-ALOHA (see column 35, lines 64-68). The addition of such features of the slotted-ALOHA type system of Gilhousen, to the CODIT system taught by Esmailzadeh, would still <u>not</u> result in an access technique that utilizes the acknowledgement in the manner claimed.

For at least the reasons outlined above, no possible combination that might arguably be suggested by Esmailzadeh and Gilhousen would actually satisfy all of the limitations of independent claim 43. Applicants therefore submit that claim 43 patentably distinguishes over the combination proposed in the prior art rejection.

Claim 44 specifies the preamble transmissions and response to the acknowledgement, albeit from a somewhat different perspective. In this independent claim, a remote station transmits a preamble at a set power level and listens for a corresponding acknowledgment. These steps repeat if the acknowledgment is not received within a predetermined interval, but the remote station increases the power level to a new set power level for the repeat transmission. The remote station ends its preamble-transmission and transmits data on the spread-spectrum signal, upon receiving the corresponding acknowledgment.

As noted, the methodology actually disclosed in the Esmailzadeh Patent transmits an access packet containing a data field, which consists of the data, a sector specific long spreading code and a short code associated with signature I (see Fig 8). There is no transmission of preambles separately preceding the access packet, and there is no transmission of a second preamble at a power higher than the power level of the first preamble transmission in the event that an acknowledgement is not received within a defined interval. Addition of a sync channel or the like from Gilhousen would not make up for this deficiency.

The SS-SRMA System disclosed in the background of the Esmailzadeh Patent (column 1, line 45-50) uses the slotted ALOHA approach, in which the mobile station sends a random access PACKET to the base station and hen awaits an acknowledgment. There is no power ramping or power control whatsoever. Hence, there is no preamble transmission and no second preamble transmission at a higher power level, and addition of sync channels and the like from Gilhousen would still not result in a technique that includes such preamble transmissions.

As discussed above, the background discussion of the CODIT system described in line 31-44 and 54-67 of column 1 of the Esmailzadeh Patent fails to disclose use of an acknowledgement. Accordingly, the mobile station does not listen for an acknowledgement for some period, repeat the transmission if it does not receive the appropriate acknowledgement in time, and transmit data if it

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does receive the appropriate acknowledgement. Gilhousen teaches only slotted-ALOHA, albeit in combination with a sync channel and other channels. The addition of the sync channel and other features of the slotted-ALOHA type system of Gilhousen to the CODIT system taught by Esmailzadeh would still not result in an access procedure in which the mobile station controls the preamble transmission in response to the acknowledgement in the manner specifically claimed.

For at least the reasons outlined above, no possible combination that might arguably be suggested by Esmailzadeh and Gilhousen would actually satisfy all of the limitations of independent claim 44. Applicants therefore submit that claim 44 and dependent claims 45 and 46 patentably distinguish over the combination proposed in the prior art rejection.

Independent claim 47 is another method claim, drafted from the perspective of the mobile station. Claim 49 relates to a CDMA wireless handset which implements certain functional steps. In both of these claims, the mobile station or wireless handset transmits a first preamble, selected from a set of predefined preambles, at a first power level. If NO acknowledgement corresponding to the first preamble is detected, then the mobile station or handset transmits a second preamble, specifically, at a second power level that is higher than the first power level. When an acknowledgement corresponding to a preamble is detected, the mobile station or handset stops preamble transmission and transmits the packet data. For reasons outlined above, the applied prior patents do not fairly suggest a combination in which there are multiple preamble transmissions at increasing power levels, if there is no positive receipt of a corresponding acknowledgement. Hence, the combination of the prior patent teachings does not suggest the particular operation of the mobile station or handset specified in either claim 47 or claim 49. Claims 47-49 therefore patentably define over the art.

Claim 50 relates to a code-division-multiple-access (CDMA) wireless base station. As claimed, during operation, the base station transmits system parameters over a broadcast control channel, and it receives and detects a preamble from a remote station, which the base station receives at an adequate power level. Upon detection of the preamble, the base station transmits an acknowledgement corresponding to the preamble; and it receives data over the wireless packet channel from the remote station.

The teachings of Esmailzadeh and Gilhousen would not lead a person skilled in the art to develop a base station that operates in the manner specifically required by claim 50. The teachings of slotted ALOHA operation in the cited patents would lead to receipt and processing of complete access packets, not the claimed receipt of a preamble followed by transmission of a corresponding

acknowledgement to instruct the remote station to initiate data transmission. The CODIT system disclosed in the background of Esmailzadeh does utilize preamble transmissions, but the base station sends power control information in response to the initial detection of the preamble from the remote station. Any combination of the CODIT technique from Esmailzadeh with other features arbitrarily selected from Gilhousen would still result in a base station which fails to send an acknowledgement that corresponds to a received and detected preamble, and receipt of responsive data transmissions from the remote system, as specifically required by claim 50. Since the cited patents do not suggest all the features of the claim, claim 50 should be patentable.

Conclusions

For the reasons outlined above, new claims 43-50 patentably distinguish over the applied art and are in condition for allowance. The Examiner has allowed claims 7, 9, 10, 12, 14, 15, 18, 20, 21, 24, 27, 29 and 33-42. Hence, all claims pending in this application should be in allowable form. Prompt reconsideration and issuance of a Notice of Allowability of all of the claims are earnestly solicited.

It is believed that the amendments and remarks above address all issues raised in the Office Action and place this case in condition for allowance. However, if any further issue should arise, which may be addressed in an interview or by an Examiner's amendment, Applicants request that the Examiner telephone their representative at the number shown below.

To the extent necessary, if any, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

The paragraph beginning on page 9, line 12 was amended as follows:

The MS spread-spectrum transmitter includes a forward-error-correction (FEC encoder 422 coupled to an interleaver 423. A packet formatter [424] 425 is coupled through a multiplexer [451] 424 to the interleaver 423 and to the controller 419. A preamble generator 452 and a pilot generator 453 for the preamble are coupled to the multiplexer 451. A variable gain device 425 is coupled between the packet formatter 424 and a product device 426. A spreading-sequence generator 427 is coupled to the product device 426. A digital-to-analog converter 428 is coupled between the product device 428 and quadrature modulator 429. The quadrature modulator 429 is coupled to the local oscillator 413 and a transmitter RF section 430. The transmitter RF section 430 is coupled to the circulator 410.

The paragraph beginning on page 10, line 18 was amended as follows:

The programmable-matched filter 415 despreads the received spread-spectrum signal. A correlator, as an alternative, may be used as an equivalent means for [despeading] despreading the received spread-spectrum signal.

The paragraph beginning at page 10, line 22 was amended as follows:

The acknowledgment detector 416 detects [the] an acknowledgment in the received spread-spectrum signal. The pilot processor detects and synchronizes to the pilot portion of the received spread-spectrum signal. The data and control processor detects and processes the data portion of the received spread-spectrum signal. Detected data passes through the controller 419 to the de-interleaver 420 and FEC decoder 421. Data and signaling are outputted from the FEC decoder 421.

The paragraph beginning at page 14, line 19 was amended as follows:

The first RS-spread-spectrum receiver receives the acknowledgment signal. Upon receiving the ACK signal, the first RS-spread-spectrum transmitter transmits to the BS-spread-spectrum receiver, a spread-spectrum signal having data. The data is shown in FIG. 6, in time, after the ACK signal. The data [includes] may include a collision detection (DC) portion of the signal, referred to herein as a collision detection signal, and message.

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The paragraph beginning at page 15, line 18 was amended as follows:

In operation, an overview of the way this transport mechanism is used is as follows. A remote station (RS) upon power up searches for transmission from nearby base stations. Upon successful synchronization with one or more base stations, the Remote station receives the necessary system parameters from a continuously transmitted by all base stations broadcast control channel (BCCH). Using the information transmitted from the BCCH, the remote station can determine various parameters required when first transmitting to a base station. Parameters of interest are the loading of all the base [station] <u>stations</u> in the vicinity of the remote station, their antenna characteristics, spreading codes used to spread the downlink transmitted information, timing information and other control information. With this information, the [bemote] <u>remote</u> station can transmit specific waveforms in order to capture the attention of a nearby base station. In the common packet channel the remote station, having all the necessary information from the nearby base station, it starts transmitting a particular preamble from a set of predefined preambles, at [a] well selected time intervals. The particular structure of the preamble waveforms is selected on the basis that detection of the preamble waveform at the base station is to be as easy as possible with minimal loss in detectability.

The paragraph beginning at page 17, line 23 was amended as follows:

The transmission of the preambles [seizes because either] <u>ceases if</u> the preamble has been picked up[,] detected[,] by the base station[,] and the base station has responded to the remote station with a layer one acknowledgment L1 ACK<u>,</u> which the remote station has also successfully received. [Transmission] <u>Alternatively, transmission</u> of the preamble [seizes] <u>ceases</u> [also] if the remote station has transmitted the maximum allowed number of preambles M_p <u>without acknowledgement</u>. Upon receiving [this] <u>an</u> L1 ACK the remote station starts transmission of its data. Once the remote station has transmitted more than M_p preambles, it undergoes a forced random back off procedure. This procedure forces the remote station to delay its access burst transmission for a later time. The random back off procedure could be parameterized based on the priority statues of the Remote station. The amount by which the power is increased from preamble to preamble is D_p which is either fixed for all cells at all times or it is repeatedly broadcast via the BCCH. Remote stations with different [priorities status] <u>priority statuses</u> could use a power increase which depends on a priority status assigned to the

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remote station. The priority status could be either predetermined or assigned to the remote station after negotiation with the base station.

The paragraph beginning at page 20, line 17 was amended as follows:

Corresponding with the preamble structure in the uplink there is a corresponding in time power control information symbol and a corresponding in time collision detection field. Upon start of data transmission the remote station uses the downlink transmitted power control information to adjust its transmitted power. The power control symbols are decoded to derive [a] binary decision data, which is then used to increase or decrease the transmitted power accordingly. Figure 11 shows the structure of the uplink frame and the slot format for the data portion of the uplink transmission. Data and control information is transmitted in an in-phase and quadrature-phase multiplexed format. That is, the data portion could be transmitted on the in-phase coordinate and the control portion on the quadrature-phase coordinate. The modulation for the data and control is BPSK. The control channel [contains] <u>may contain</u> the information for the receiver to enable the demodulation of the data. The control channel provides for upper layer system functionality. The data portion consists of one or more frames. Each frame consists of a number of slots. As an example the frame duration could be 10 milliseconds long and the slot duration 0.625 milliseconds long. In that case, there are 16 slots per frame. The beginning of the data payload contains a collision detection field used to relay information about the possibility of collision with other simultaneously transmitting remote stations. The collision detection field is read by the base station. The base station expects the presence of the collision detection field since it had provided an ACK signal at the last time slot.

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